

Improving Student Achievement Using Expert Learning Systems

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Currently educators and the public alike are intent on increasing student achievement and school performance. At the same time, college students meeting the highest admissions standards are choosing careers other than education.

The traditional approach to increasing the quality of teaching and learning is to better train future teachers. The intent is to offer these future teachers training and experiences that allow them to perform at levels comparable to our best teachers past and present. If this was accomplished we in turn would be in a better position to provide every child in America with the highest quality education from an outstanding teacher.

A supplementary approach focuses on the use of expert systems. In this approach the students are taught by applying technology using an “expert” in the content being presented. The teacher is the facilitator of learning and a learner at the same time.

Note: Applying expert systems is “not” only about hardware and software but about human relationships and empowerment.

Computers and digital technology hold great promise for helping teachers leverage their ability to facilitate learning and at the same time learn from the experts as they facilitate student learning. This is what Stephen R. Covey calls “three person teaching.” This in turn is much more effective than staff development as there is little or no evidence that site based staff development has any measurable impact on student achievement or school performance.

It is important to remember that whatever the learning content, it must be aligned to produce synergistic results. This applies to the use of expert computer systems and digital technology. A teacher’s ability to leverage her/his facilitation efforts is wasted if the content of the expert system she/he is facilitating is not aligned with the school’s official curriculum.

Another important point! Remember Russell Ackoff’s “Content of the Human Mind.” The expert computer system we will describe can be used at any level of the content. These systems hold special promise at the upper content levels. At these levels, students need to go beyond the acquisition of data and information to the need to acquire knowledge, understanding, and wisdom.

How Do Expert Systems Work?

For a group setting, the teacher projects the image that would normally appear on a computer monitor onto a large screen. The system is designed to be non-linear and allows

the participants (teachers and students) to choose what is to be discovered and learned. This allows the participants to follow their interests and pursue a path of learning unique to their needs. This exploring and learning is taking place within the context of knowledge that has been validated and enriched within a stimulating format. Unrestricted access to learning is the intent.

The system uses text, graphics, animation, full-motion video, sound, color, and allows the participants to be fully interactive with the system.

Participants have opportunities to click on the appropriate icons and call on experts who share a full range of insights using full-motion video. Participants are provided content focusing knowledge, understanding, and wisdom to include conflicting points of view via experts.

It is conceivable that a learner could explore the system thousands of times and never follow the same learning route. The learners choose what they want to learn based on what motivates them most at that point.

The idea is for the teacher to leverage his/her capacity to facilitate learning. This empowers teachers to assemble and facilitate a team of world-class experts for the purpose of providing learning opportunities for all participants (in this example students and teachers themselves). Everyone benefits.

We can easily see how these expert systems will progress from the use of large screens to the use of life-size holograms. Can you imagine a holographic image of Neil Armstrong standing in your class sharing his experiences with Buzz Aldrin and Michael Collins as they reflect on their preparations to land on the moon? The sophistication will grow, but we have all the powerful technology based tools needed to employ expert computer systems today.

What's the Point?

The university is encouraged to continue to enhance and deliver its current teacher preparation programs. Valuable new knowledge about the art of teaching is being discovered by dedicated researchers every day. The use of expert learning systems does not discount the value of this new knowledge. The approach being encouraged is to create expert learning systems in parallel with current efforts. The university would begin to create "expert learning systems" by committing resources and personnel. As these systems come on-line the new learning technology would be integrated into our teacher preparation programs and shared with those teaching in our service area.

Just imagine every student in our service area (41 school districts) taught by the world's best teachers. Plus, every student will be able to direct her/his learning facilitated by a teacher that is learning as they learn. Roland Barth calls this a "community of learners."

The university could create expert learning systems allowing the best content and content experts to respond to all our children. At the same time our teachers by working with these expert systems would become progressively more capable by facilitating these systems. The more they facilitate these programs, the more expert they become. Under these conditions learning for teachers would truly be career long experience.

These expert learning systems would be based on the digital revolution. An entire school's curriculum could in fact be stored on DVDs or placed in computer files using digital technology. These same systems could in fact be delivered via the Internet. In this scenario any learner would have access to the content experts.

The most effective use of expert learning systems is to leverage the capacity of teachers/students to facilitate learning. We clearly need to work at providing teachers with tools that empower them and allow for the unrestricted energy flow. This will allow each teacher to accomplish more quality work in less time. In this future we will minimize or eliminate the handicap of having teachers entering the teaching profession with lower academic credentials than some competing professions. In fact, we see teachers using these high leverage tools out-performing any group of teachers past or present.

In the real world, all tests are open-book tests. The intent is to have students learn and learn how to learn. Expert learning systems have the potential to become the teacher's most effective tool for leveraging student learning.

For the cost of a few poorly designed programs universities could have themes (covering interdisciplinary content areas) that reflect the official public school curriculum. Again, an entire multimedia curriculum would take less shelf space than a single, hardcopy set of the *World Book Encyclopedia*.

Again, for emphasis, you can easily see how a school's entire official curriculum could be placed on compact discs/internet and made available to all participants (teachers, students, parents, etc.) anytime, anywhere. Wow!

Important Key Steps

The following steps will need to be created simultaneously:

1. Create an expert learning system development team.
2. Create a template (standardize the technology) in which course content is to be inserted.
3. Identify the components of the official comprehensive public school curriculum.
4. Identify one component of the official curriculum to be used as a pilot.
5. Identify content experts consistent with the requirements of the official curriculum.
6. Pilot test the systems, make adjustments, and then integrate the expert systems.

Note: This effort will require many interdisciplinary development teams.

Conclusion

With a standardized template and a defined curriculum, expert system units can be developed throughout the country by various schools, colleges, universities, corporations, scientists, mathematicians, and others. It could be a national effort that would geometrically increase the ability of our schools to better facilitate increased knowledge, understanding and wisdom among teachers and students.

Other Points to Ponder

Natural Law: Teaching for learning is less effective than facilitating for learning. Teaching is a major barrier to student learning in the current education environment.

How do expert systems work? Winston Churchill said it best, “First we define our systems and then they define us.”

Starting in the middle school, students begin to show less and less interest in learning information for information’s sake. This should cause educators to reflect.

Natural Law: Energy flow is increased when humans use tools that help them leverage their intelligence and skills, allowing them to do their jobs better.

Energy flow in humans is restricted when tools are designed to replace workers, placing more importance on the tool than the worker.

There are very few if any computer assisted instruction systems designed to place the computer in a dependent relation with the user. It is essential that the human using the system assumes the role of facilitator and not servant.

Where To From Here

If you would like to be a part of the creation of expert learning systems or have comments you may respond to “naturalforces@worldnet.att.net”.

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References

- Ackoff, R.L. (1999). *Ackoff's best*. New York: John Wiley & Sons, Inc.
- Barth, R. (1990). *Improving schools from within*. San Francisco: Jossey-Bass Publishers.

Covey, S.R. (1989). *The 7 habits of highly effective people, powerful lessons in personal change*. New York: Simon & Schuster Inc.

Green, R. (2003). *Natural forces: How to significantly increase school performance in the third millennium*. Tallahassee: Educational Services Consortium, Inc.